11/01/00

PATENT APPLICATION TRANSMITTAL LETTER

Docket Number 00007-001

To the Assistant Commissioner for Patents, Box Patent Application:

Transmitted herewith for filing under 35 U.S.C. 111 and 37 CFR 1.53 is the patent application of **David P. Tremblay and Karen A. Tremblay** entitled **APPARATUS AND METHOD FOR ASSISTING MECHANICS WITH THE REMOVAL AND REPLACEMENT OF BRAKE DRUMS.**

Enclosed are:

[X] 9 pages of written description, claims and abstract

[X] 4 sheets of drawings

[X] executed declaration of the inventor

[X] verified statement (declaration) claiming small entity status – independent inventors

[X] information disclosure statement and Form PTO-1449, including copies of 2 references

[X] other: **return receipt postcard**

CLAIMS AS FILED

	NUMBER FILED	NUMBER EXTRA	RATE	FEE
BASIC FEE			**$710**	**$710**
TOTAL CLAIMS	**20 – 20 =**	**0**	**x $18**	**$0**
INDEPENDENT CLAIMS	**2 - 3 =**	**0**	**x $80**	**$0**
MULTIPLE DEPENDENT CLAIM PRESENT			**$270**	**$0**
*NUMBER EXTRA MUST BE ZERO OR LARGER		**TOTAL**		**$710**
If applicant has small entity status under 37 CFR 1.9 and 1.27, then divide total fee by 2, and enter amount here.		**SMALL ENTITY TOTAL**		**$355**

[X] A check in the amount of **$355** to cover the filing fee is enclosed.

[ ] The Commissioner is hereby authorized to charge and credit **Deposit Account No.** as described below. I have enclosed a duplicate copy of this sheet.

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I hereby certify that this correspondence is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to Box Patent Application, Assistant Commissioner for Patents, Washington, DC 20231.

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Respectfully submitted,

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both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Date: 10/31/00 Signature of Inventor: David P. Tremblay

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Applicant or Patentee: **David P. Tremblay and Karen A. Tremblay**
Serial or Patent No.: **Applied For** Docket No.: 00007-001
Filed or Issued: **Herewith**
For: **Apparatus and Method for Assisting with the Removal and Replacement of Brake Drums**

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) AND 1.27(b)) -- INDEPENDENT INVENTOR

As below named inventors, we hereby declare that we qualify as independent inventors as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled **Apparatus and Method for Assisting with the Removal and Replacement of Brake Drums** described in

[X] the specification filed herewith
[ ] application serial no. _____, filed _____.
[ ] patent no. _____, issued _____.

We have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which we have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

[X] no such person, concern or organization
[ ] persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME AND ADDRESS:

[ ] INDIVIDUALS [ ] SMALL BUSINESS CONCERN [ ] NONPROFIT ORGANIZATION

We acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or

Apparatus and Method for Assisting Mechanics with the Removal and Replacement of Brake Drums

Background of the Invention:

The present invention relates generally to a nut wrench called a drumbar and, more particularly, to a nut wrench used for removing and replacing nuts and bolts to remove and replace the brake drums in the wheels of trailers, trucks, buses and all other vehicles that utilize spoke wheels, including but not limited to Dayton Wheels™ manufactured by the Dayton Wheel Products Company. Dayton Wheel Products Company is located at 115 Compark Road Dayton, Ohio 45459

The process of removing and replacing brake drums requires the mechanic to remove nuts and bolts from the wheel to remove and replace the brake drums. The mechanic holds the bolt located on the backside of the wheel to prevent the bolt from rotating while rotating the nut located on the frontside of the wheel on or off the bolt. One way to accomplish this task is to have the mechanic use extensions and bars to reach the bolts on the backside of the wheel while rotating the nuts on the frontside. This process requires the mechanic to straddle the wheel with his arms and to control two tools at one time, which can be very cumbersome and awkward, and requires a high degree of skill.

Alternatively, two mechanics can assist each other in the process of removing and replacing the brake drums. One mechanic positions himself/herself behind the wheel assembly of the vehicle to hold the bolts located on the backside of the wheel to prevent the bolts from rotating while the second mechanic removes or replaces the nuts on the bolts from the frontside of the wheel. This process requires two mechanics which is labor intensive and costly.

In a third method for removing and replacing the nuts and bolts that secure the brake drums to the wheel one mechanic reaches through the axle housing to hold the bolt located on the backside of the wheel to prevent the bolt from rotating while removing or replacing the nuts on the bolts from the frontside of the wheel. This process is labor intensive, costly and can only be performed with a mechanic

that has an extremity, which is small enough to fit through the axle housing of the wheel.

The present invention is directed to overcoming one or more of the problems set forth above.

Summary of the Invention:

An aspect of the invention is to provide a drumbar apparatus and method for assisting mechanics in removing and replacing nuts and bolts from a wheel of trailers, trucks, buses and all other devices that utilize Dayton Wheels™ or spoke wheels in such a manner that the necessary assembly and disassembly costs and labor times are reduced with improved assembly and disassembly techniques and excellent performance.

In one aspect of this invention there is provided a drumbar apparatus for allowing one mechanic to position himself/herself on the frontside of a wheel and wherein said mechanic extends said drumbar through the axle housing to hold a bolt with said drumbar on the backside of the wheel to prevent the bolt from rotating while the mechanic removes or replaces the nut of the frontside of the wheel.

In another aspect of this invention there is provided a method in which one mechanic positioned in front of a wheel extends a drumbar through the axle housing and holds the bolt of a wheel located on the backside of the wheel with the drumbar to prevent the bolt from rotating while removing or replacing the nut on the frontside of the wheel.

With respect to the two mechanic process previously described, this invention reduces the number of mechanics needed for removing or replacing the nuts and bolts on a wheel to remove and replace the brake drums, hence, the labor costs are substantially lowered as a result of the drumbar.

With respect to the one mechanic process previously described, the labor time and required skill level of the mechanic for removing and replacing the nuts and bolts to remove and replace the brake drums are reduced, hence, the labor

costs are substantially lowered and the required skill level of the mechanic is reduced as a result of the drumbar.

Brief Description of the Drawings:

Reference is now made to the drawings, which illustrate the best known mode of carrying out the invention and wherein the same reference characters indicate the same or similar parts throughout the views.

Fig. 1 is a side view of a drumbar;

Fig. 2 is a side view of the drumbar with angle dimensions;

Fig. 3 is a top view of the drumbar;

Fig. 4 is an enlarged view of the wrench end shown in Figs. 1 and 2;

Fig. 5 is a perspective illustration of a frontside and backside of a wheel; and

Fig. 6 is a perspective illustration of an axle housing of a wheel from the frontside of a wheel.

Detailed Description:

Trailers, trucks, buses and all other devices that utilize Dayton Wheels™ or spoke wheels have brake drums (not shown) which are secured to the wheel with, *inter alia*, nuts 23 and bolts 21. The nuts 23 and bolts 21 are removable from the wheel assembly. This is different than the arrangements in automobiles, pick-up trucks and single-wheeled trucks. For trailers, trucks, buses and all other devices that utilize Dayton Wheels™ or spoke wheels, the bolt 21 is held in place by the nut 23 and wherein said bolt 21 has a bolt head 22. The bolt 21 extends from the backside of the wheel to the frontside of the wheel. When assembled to the wheel, the bolt head 22 is located on the backside of the wheel which is difficult to access and the nut 23 which is threaded onto the bolt is located on the frontside of the wheel which is more readily accessible. Fig. 5 illustrates the frontside and backside of the wheel. For disassembly of the bolts 21 and nuts 23 from the wheel, the bolt 21 is held to prevent the bolt 21 from rotating while the nut 23 is

rotated and removed from the bolt 21 to remove and replace the brake drums. For re-assembly of the bolt 21 and nut 23 to the wheel, the bolt 21 is held to prevent the bolt 21 from rotating while the nut 23 is rotated to replace the nut 23 on the bolt 21 whereby the brake drums are secured to the wheel. The invention is a method and drumbar 1 used to assist the mechanic in the disassembly and re-assembly and is explained hereinafter.

Referring now to the drawings, and initially to Fig. 1, the drumbar 1 is shown with a handle end 2 and wrench end 3. In the preferred embodiment, the drumbar 1 has a first bend 4 and second bend 5; however, it is possible to have only one bend 5 between the handle 2 and wrench end 3. The handle 2 is located on a first end portion 6. After the first bend 4, an intermediate portion 7 connects the first end portion 6 with a second end portion 8. The intermediate portion 7 is traverse to said first end portion 6. The second bend 5 is located between the intermediate portion 7 and second end portion 8. The intermediate portion is traverse to said second end portion 8. The second end portion 8 has the wrench end 3 mounted thereon. The wrench end 3 has a drive socket receiver 9 that is substantially perpendicular to said wrench end 3 for receiving different size sockets. The wrench end 3 is sized to mate with a socket (not shown) wherein said socket will accept the bolt head 22. It is obvious to those skilled in the art that the wrench end 3 configuration is dependent upon the sockets, and the socket size will be selected according to the size of the bolt head 22 and no further explanation is needed. However, in the preferred embodiment, the wrench end 3 is hexagonal with a half inch drive socket receiver 9 and different size sockets can be attached as the case may be. A ball bearing 30 is protruding slightly from the wrench end 3, which is typical with most ratchet socket receivers. The ball bearing 30 is movable and under spring tension.

The drumbar 1 is made from tool steel in the preferred embodiment; however, there are numerous materials that are known in the art that can be substituted for the tool steel. The handle 2 is made from various materials but in

the preferred embodiment, it is made of a material, which prevents slipping from the hand.

If a mechanic attempts to remove or replace the nut 23 by rotating the nut 23 without preventing the bolt 21 from rotating, the bolt 21 will rotate along with the nut 23. To prevent this from occurring, the drumbar 1 allows one mechanic to conveniently position himself/herself at the frontside of the wheel wherein the mechanic extends the drumbar 1 through the axle housing and holds the bolt head 22 with the socket mounted on the wrench end 3 of the drumbar 1 and simultaneously removing the nut 23. The drumbar 1 is fitted with the appropriate socket. The socket size is dependent upon the size of the bolt head 22. Once again, there are various socket sizes, and the mechanic need only determine the correct bolt head 22 size to determine the correct socket size. The socket is then mated with the drive socket receiver 9. Once again, the mechanic extends the drumbar 1 through the axle housing and the socket on the drive socket receiver 9 of said drumbar 1 is placed over the bolt head 22, which holds the bolt 21. The mechanic holds the drumbar 1, in one hand, to prevent the bolt 21 from rotating, while at the same time the mechanic rotates the nut 23 using his/her other hand to control a tool (not shown) that removes or replaces said nut 23 from or on the bolt 21. The drumbar 1 allows one mechanic positioned at the frontside of the wheel to remove and replace nuts and bolts on a wheel.

Other objects, features, advantages and applications will be apparent to those skilled in the art. While preferred embodiments of the present invention have been illustrated and described, this has been by way of illustration and the invention should not be limited except as required by the scope of the appended claims.

What we claim is:

1. A drumbar apparatus that can be inserted into an axle housing of a spoked wheel of a vehicle for adjusting a nut from said spoked wheel, having a frontside and a backside, comprising:

a member, having a first end portion, intermediate portion and a second end portion, wherein said first end portion includes a holding mechanism, that is transverse to said first end portion and said intermediate portion is traverse to said first end portion.

2. A drumbar apparatus according to claim 1, wherein said intermediate portion is capable of extending through said axle housing of said spoked wheel.

3. A drumbar apparatus according to claim 1, wherein said holding mechanism can secure a bolt head of a bolt located on the backside of the wheel to prevent rotation of said bolt.

4. A drumbar apparatus according to claim 1, wherein said second end portion includes a handle.

5. A drumbar apparatus according to claim 1, wherein said holding mechanism is a wrench.

6. A drumbar apparatus according to claim 2, wherein said wrench includes a socket.

7. A drumbar apparatus according to claim 3, wherein said socket is detachable.

8. A drumbar apparatus according to claim 1, wherein said holding mechanism is substantially perpendicular to said first end portion.

9. A drumbar apparatus according to claim 1, wherein said intermediate portion is substantially perpendicular to said first end portion.

10. A drumbar apparatus according to claim 1, wherein said handle on said second end portion is transverse to said intermediate portion.

11. A drumbar apparatus according to claim 10, wherein said handle on said second end portion is substantially perpendicular to said intermediate portion.

12. A method for utilizing a drumbar apparatus that can be inserted into an axle housing of a spoked wheel of a vehicle for adjusting a nut from said spoked wheel, having a frontside and a backside, comprising:

utilizing a member, having a first end portion, intermediate portion and a second end portion, wherein said first end portion includes a holding mechanism, that is transverse to said first end portion and said intermediate portion is traverse to said first end portion by inserting said intermediate portion into said axle housing so that said holding mechanism can secure a bolt located on said backside of said spoked wheel to prevent rotation of said bolt; and

utilize a tool to adjust a nut attached to said bolt that is located on said frontside of said spoked wheel.

13. A method for utilizing a drumbar apparatus according to claim 12, wherein said adjustment of said nut with said tool includes removal of said nut.

14. A method for utilizing a drumbar apparatus according to claim 12, wherein said holding mechanism includes a wrench.

15. A method for utilizing a drumbar apparatus according to claim 14, wherein said wrench includes a socket.

16. A method for utilizing a drumbar apparatus according to claim 15, wherein said socket is detachable.

17. A method for utilizing a drumbar apparatus according to claim 12, wherein said holding mechanism is substantial perpendicular to said first end portion.

18. A method for utilizing a drumbar apparatus according to claim 12, wherein said intermediate portion is substantial perpendicular to said first end portion.

19. A method for utilizing a drumbar apparatus according to claim 12, wherein said first end portion includes a handle.

20. A method for utilizing a drumbar apparatus according to claim 12, wherein said first end portion is traverse to said intermediate portion.

Apparatus and Method for Assisting Mechanics with the Removal and Replacement of Brake Drums

Abstract of the Disclosure:

A drumbar apparatus and method that allows one mechanic positioned at the frontside of a wheel on a trailer, truck, bus or any other vehicle that utilize Dayton Wheels™ or spoke wheels to hold a bolt head of a bolt located on the backside of the wheel to prevent said bolt from rotating while simultaneously removing or replacing a nut located on the frontside of the wheel that comprises a wrench end located at a second end portion of the drumbar apparatus used to hold a socket and wherein the socket is used to hold the bolt on the backside of the wheel, a handle located at first end portion of said wrench end, a middle section connecting the handle and the wrench end wherein the mechanic positioned at the frontside of the wheel holds the handle of the drumbar with his/her first hand and extends the drumbar apparatus through the axle housing of the wheel and holds the bolt located on the backside of the wheel with the socket and wherein the mechanic rotates the nut located on the frontside of the wheel on or off the bolt with a tool held in his second hand.

Fig. 1

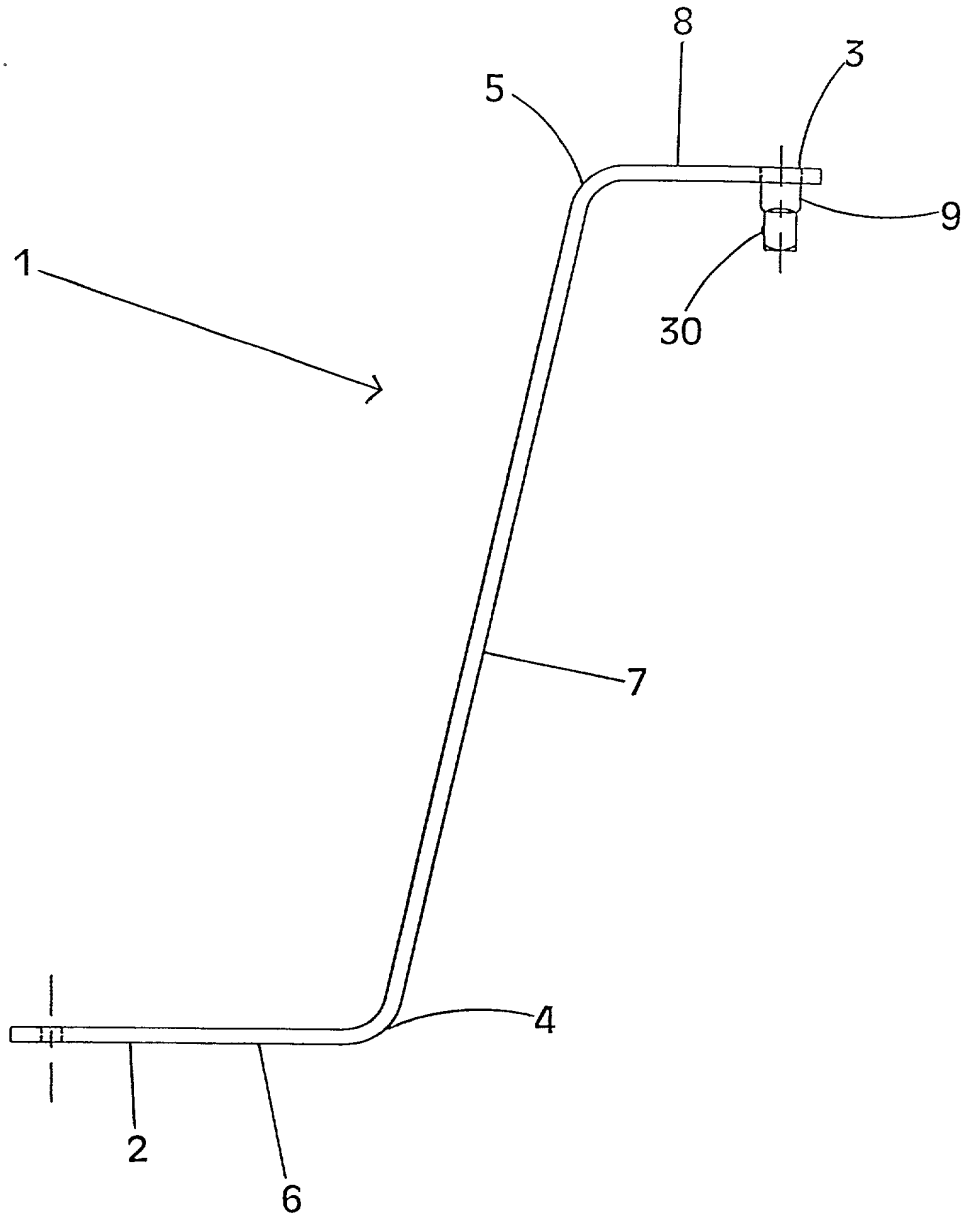

Fig. 2

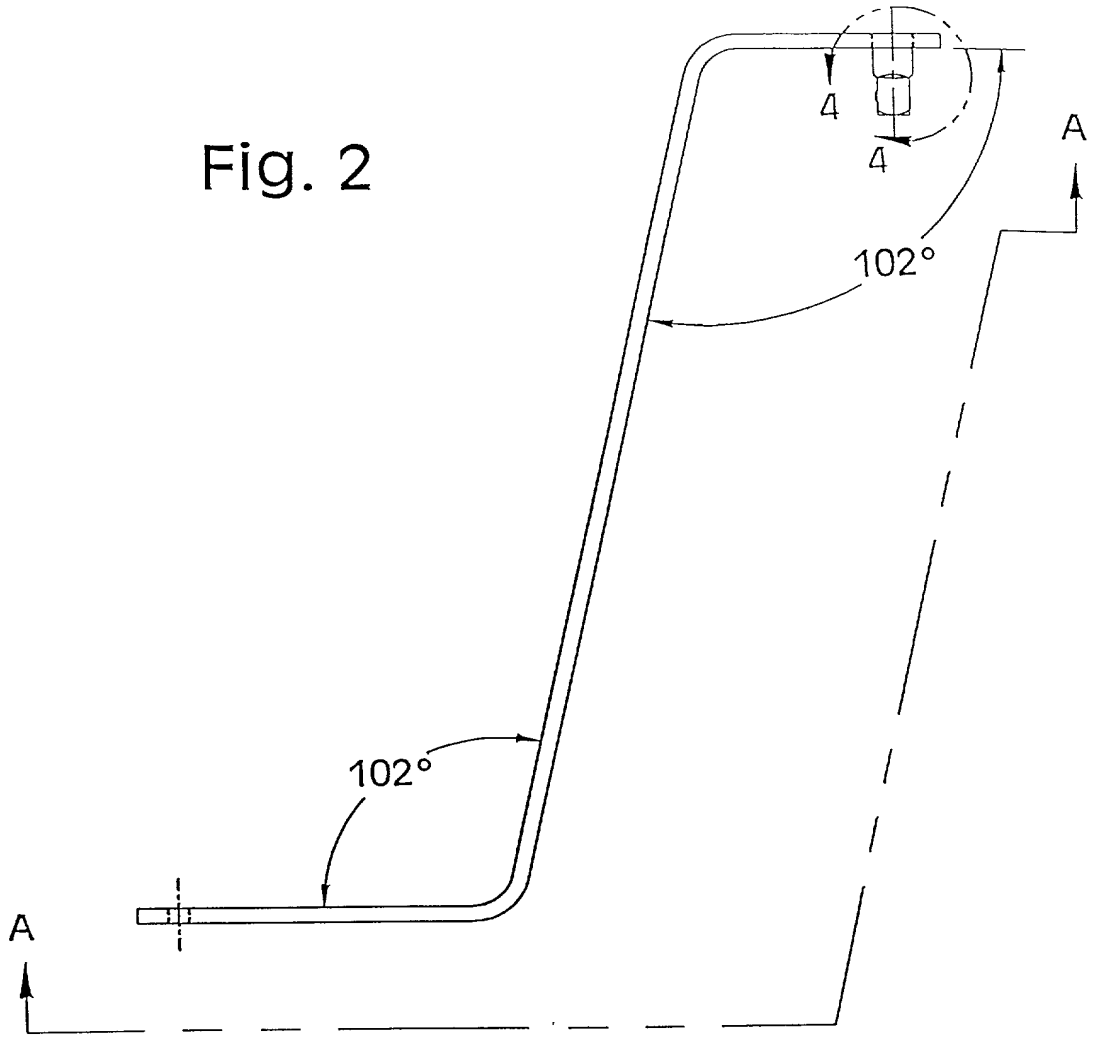

Fig. 3

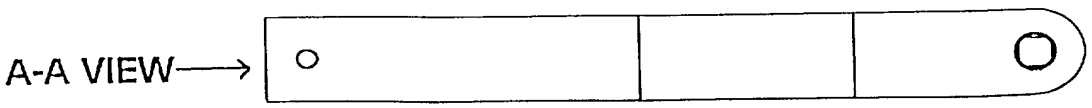

Fig. 4

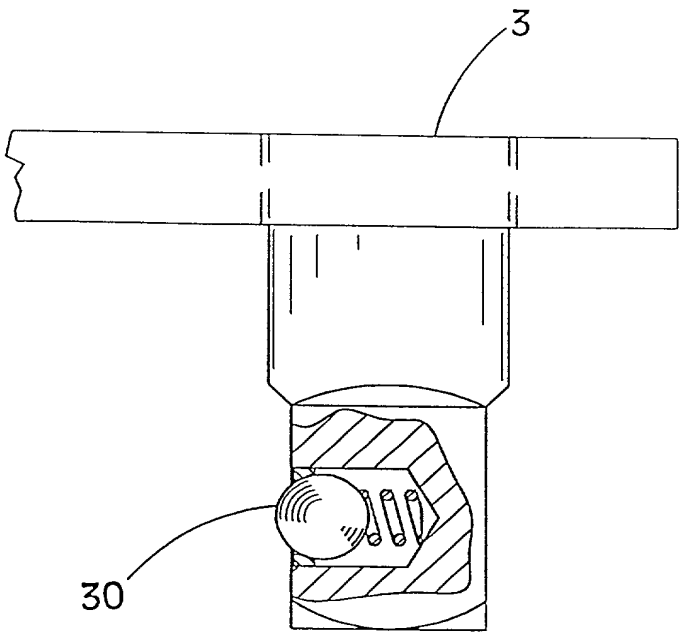

Fig. 5

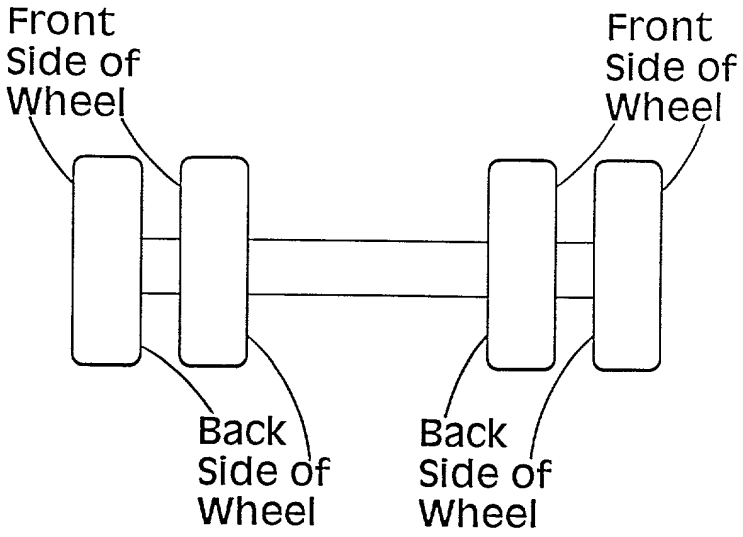
Front
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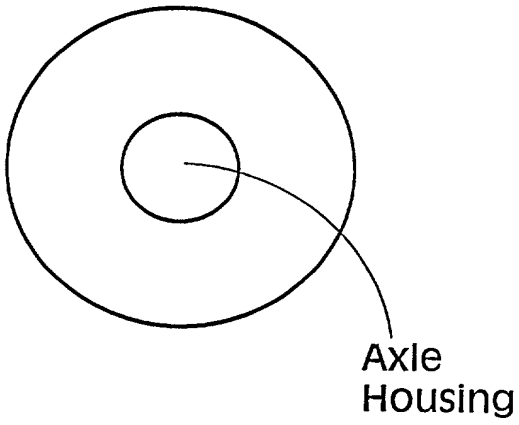
Fig. 6


Axle
Housing

DECLARATION FOR PATENT APPLICATION

We, David P. Tremblay, residing in Billerica, Massachusetts, USA, and Karen A. Tremblay, residing in Billerica, Massachusetts, USA, declare that we are citizens of the United States of America and that we believe we are the original and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Apparatus and Method for Assisting with the Removal and Replacement of Brake Drums

the specification of which is attached hereto.

We hereby state that we have reviewed and understand the contents of the above identified specification, including the claims.

We acknowledge the duty to disclose to the Patent and Trademark Office all information known to be material to patentability as defined in §1.56.

There is no foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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